# REGIONAL INTEGRATION AND EMPLOYMENT IN WEST AFRICAN ECONOMIC AND MONETARY UNION: AN ANALYSIS THROUGH OKUN' S LAW

## [1, 2]*Siriki COULIBALY, [3]Malick Ousmane TRAORE and [3]Essossolam PAKOUPETE

[1]DEECAF (Destination Économique Afrique), France – Rennes
[2]Faculty of Economics Université Péléforo Gon Coulibaly, Côte d'Ivoire - Korhogo
[3]ENSEA (École Nationale Supérieure de Statistiques et d'Économie Appliquée), Côte d'Ivoire – Abidjan

## ARTICLE INFO

## ABSTRACT

The objective of this study is to analyze the advent of the extension of the West African Economic and Monetary Union (WAEMU), pooling the monetary and economic policies for the eight member countries towards an employment union. For this, a convergence of the employment dynamics of the member countries is necessary. The study implements Okun's law, which establishes an inverse relationship between growth and unemployment, to determine the Okun coefficients of the member countries and analyze their proximity. It appears that the WAEMU zone is not currently an optimal employment zone, however a core is emerging and the proximity of the Okun coefficients with the expected sign indicates the viability of a possible employment union project.

**Citation**: Siriki COULIBALY, Malick Ousmane TRAORE and Essossolam PAKOUPETE. 2025. *"Regional Integration and Employment in West African economic and monetary union: An analysis through Okun'S Law". International Journal of Development Research*, 15, (01), 67510-67513.

## INTRODUCTION

Regional integration is an important process for geographically close countries choosing to collaborate closely to achieve common economic, political and social objectives. Theoretically, regional integration should facilitate trade in the area, playing favorably on the levers that lead to the well-being of the populations of member states. Integration allows vulnerable areas to benefit from both the short-term and long-term benefits of population concentration in terms of convergence of living standards (World Bank 2009). Krugman (1992) believes that successful regional integration makes it possible to stimulate economic growth through exchanges of goods and services between regions, to increase competitiveness through comparative advantages and to promote innovation and knowledge transfer in the area. This revival of economic activity leads at the same time to an increase in consumption followed by an increase in production and therefore that may reduce unemployment ultimately. This analysis was shown empirically in the European Union by Krugman and Venables (1995). Regional integration can help gain a greater market share by facilitating access to regional markets. Collier (2007) considers that the countries of West, East and Central Africa, the Pacific Islands and Central Asia, which according to him constitute "the bottom billion", need three types of instruments.

First, they need strong institutions capable of reducing their borders and connect countries together. Second, huge infrastructures connecting countries and incentives for access to global markets through more flexible rules. Third, increased support for social services. Regional integration helps small and remote countries develop their supply within regional production networks, which then gives them access to global markets, Deichmann and Gill (2008). The West African Monetary Union (WAMU) has been created in 1963, originaly to pool monetary policies. In 1994 it became the West African Economic and Monetary Union (WAEMU) with the aim of improving the standard of living of its member countries through the fluidification and intensification of trade between nations, and thanks to the freedom of movement of goods and services and people. Its members are currently Benin, Burkina Faso, Ivory Coast, Guinea Bissau, Mali, Niger, Senegal and Togo. WAEMU is considered as one of the most successful monetary and economic unions in Africa, as the areaexperienced a dynamic positive economic growth since the end of the 1990s. The zone remains currently the most dynamic in Africa according to theFrenchGeneral Directorate of the Treasury (2024), with a growth rate of 6.6% in the second quarter of 2024. From WAMU to WAEMU, can the zone be considered as an employment union? In other words, can the economic and monetary integration of the zonebe extended to the employment sector?

To answer this question, this study borrows the analytical framework offered by Okun (1962) known as Okun's law which establishes an inverse relationship between economic growth and the unemployment rate. This involves verifying whether the good overall economic dynamics of the WAEMU zone translates into overall employability dynamics. This would result in a convergence of the Okun coefficients of the member countries. In other words, the Okun coefficients of the member countries would be distributed around the Okun coefficient of the union. The objective of this study is to estimate the Okun coefficient for each of the WAEMU countries on one hand and the Okun coefficient for the zone on the other hand, in order to deduce the convergence of the coefficients. Such convergence would reflect a dynamic of employment integration induced by the existing dynamic of economic integration. The rest of the paper is organized as follows. Section 2 presents the theory of Okun's law. Section 3 reviews the literature and section 4 sets out the methodology adopted in the study. Section 5 presents and analyzes the results and Section 6 concludes.

***Okun's law:*** Okun's theory, published in 1962, proposes a direct empirical relationship between the economic growth rate and the unemployment rate. Okun, over the period 1947 to 1960, used American data to establish relationship between economic growth and unemployment. His theory offers a framework for estimating the threshold of economic growth from which the unemployment rate begins to decrease, thus highlighting an inverse relationship between these two variables. Okun distinguishes two versions of his model: "the difference version" and "the gap version". The first version examines the relationship between changes in the unemployment rate and changes in the economic growth rate rather than considering the variables in their absolute levels. The second version extends the first version by adding other variables such as inflation to better understand economic fluctuations.

# LITERATURE REVIEW

The literature is well supplied regarding the analysis of the relationship between economic growth and unemployment following the theory of Okun (1962). This study only refers to some of the applications. Favereau and Mouillart (1981) on the French economy showed that with regard to the Keynesian analysis of Okun's law, any fluctuation of one point in the unemployment rate requires a surplus of 5 points in economic growth rate, compared to the potential growth rate. Huang and Chang (2005) demonstrate the validity of Okun's law through a structural change approach with threshold. Their results show that Okun coefficients are significantly higher in absolute value in periods of recession than in expansion phases. The results of the analysis of the relationship between economic growth and the unemployment rate by Knotek (2007) confirm that the Okun coefficient weakens during expansion phases compared to recession periods. Verne (2007) through a bivariate causality model showed that Okun's law is verified in the OECD area over the period 1979-2006. Karfakis et al. (2014) find an Okun ratio of 1/3 between 2000 and 2013 in Greece. However, it appears that the sensitivity of unemployment to product variations is greater during contractions in production activity than during expansions.

Lamzihri and El Kamli (2021) verify Okun's law in developed and developing countries, namely: France, Italy, Spain, Morocco, Tunisia, Egypt and South Africa, over the period of 1991-2020. They find that the Okun coefficient is significant in all the countries of the study. Porras-Arena & Martín-Román (2023) show that in Latin America, fluctuations in economic activity have less influence on unemployment rates than in more advanced economies, and that the unemployment/production relationship varies by country. For them, cyclical variations harm the quality of employment in all cases. In the African context, some studies have analyzed the dynamics between growth and unemployment. Bankole and Fatai (2013) in Nigeria show that Okun's law is not valid. Subsequently, the work of An et al. (2016) concluded that Okun's law is valid in the case of developed countries and that Nigeria does not experience the same economic

and structural realities especially with regard to the labor market. AdamaZerbo (2010) reveals that Okun's law is verified in Burkina Faso but this relationship is unstable due to vicious structural changes. Traoré et al. (2021) demonstrate the existence of a linear relationship between economic growth and unemployment in Mali between 1974 and 2018 in the short and long terms. However, Okun's law is not verified, the relationship being positive. Korem (2021) tested Okun's law in the UEMOA zone. It appears that Okun's law which predicts a negative relationship between unemployment and growth is verified in Niger and Togo but is not verified in the six other countries of the union. The validity of Okun's law has been tested in both developed and developing countries.

It appears overall that the results of the analysis of Okun's law at the level of industrialized countries are significant on the one hand for countries with low unemployment rates due to favorable labor market conditions, monetary creation, etc. On the other hand, they are significant in countries where the unemployment rate is high (the case of the Czech and Slovak regions (Durech et al. 2014)), explained by the massive emigration of poor populations to richer countries. The relationship between GDP growth and unemployment (Duernecker, 2008) can be potentially disrupted by technological absorptive capacity. To this end, to highlight the reasons for economic growth by looking at technical progress, it appears that variations in the unemployment rate around its equilibrium level are closely linked to fluctuations in real GDP around its potential level, in this sense, employment can decrease in a situation of reduced activity and increase during the economic recovery or recovery phase. Through an analysis by Okun, Boussemart et al. (2020) considers it important for developing countries or countries with a low technological gap to innovate and engage in employee training so that even in the presence of an economic shock or reduction in economic activity, onecouldexpect a "labor hoarding" effect.

# METHODOLOGY

***The model:*** The theoretical basis of the relationship defined by Okun is that an increase in the workforce leads to more goods and services. Okun (1962) found that the unemployment rate decreased in years when the Output Gap was high, while it increased when the Output Gap decreased. Adair and Souag (2018), based on Okun's theory, propose two mathematicsalternative versions of this relationship between the economic growth rate and the unemployment rate. This study adopts the version, in first difference of the model which is presented as follows:

$$\Delta U_t = \alpha + \beta \Delta Y_t + \varepsilon_t \tag{1}$$

Where $\beta$ is Okun's coefficient, measuring the unemployment elasticity to GDP. $U_t$ is unemployment rate, $Y_t$ is GDPand$\varepsilon_t$represents error term.

***The variables and data:*** The variables of this study to analyze integration in the field of employment through Okun's law in WAEMU are real GDP and the unemployment rate, collected on the website of the World Bank and the ILO (International Labor Organization), respectively, from 2000 to 2022 for all WAEMU countries. Graphical analysis of the data is presented in Figures 1 and 2. It appears from the observation of figures 1 & 2 that there is generally no evidence of the validity of Okun's law either for the entire area or for each of the countries taken individually until 2012. Both variables evolved in the same direction, describing a positive relationship. However, suspicions of the validity of Okun's law appear after 2013 in general, except for Burkina Faso, Togo and Mali. The confirmation of the above graphical observations is made through the study of the causality between the variables of the study and the estimation of equation (1).

# RESULTS ET INTERPRETATIONS

*Causality test:* The analysis at this level following the graphical observations aims to establish the intensity and direction of the relationship between the growth rate and the unemployment rate in the WAEMU using the Pearson correlation test, the results are given in Table 1.

indicating the possibility of a long-term relationship between GDP and unemployment.

*Short term and long term Okun's law coefficients:* Les résultats des tests de stationnarité et de cointégration indiquent que la méthode d'estimation appropriée est le VECM. Les résultats de l'estimation des coefficients d'Okun de court et de long terme dans l'UEMOA sont donnés dans le Tableau 4.

**Table 1. Pearson test results**

| Countries | Correlation coefficients | *p-value* | Conclusion | hint of okunlaw |
|---|---|---|---|---|
| Benin | 0.48** | *(0.02)* | Weak positive correlation | No |
| Burkina Faso | 0.93*** | *(0.00)* | High positive correlation | No |
| Côte d'Ivoire | -0.84*** | *(0.00)* | High negativecorrelation | Yes |
| Guinée-Bissau | 0.30 | *(0.18)* | Non significantcorrelation | Non |
| Mali | 0.77*** | *(0.00)* | High positive correlation | No |
| Niger | -0.69*** | *(0.00)* | High negativecorrelation | Yes |
| Sénégal | -0.69*** | *(0.00)* | High negativecorrelation | Yes |
| Togo | 0.06 | *(0.79)* | Non significantcorrelation | No |
| WAEMU | -0.65*** | *(0.00)* | High negativecorrelation | Yes |

Notes :*(***) and (**) represent respectively significance level at 1% and 5%*

**Table 2. Stationarity test results**

| Variables | Level | Test | Coefficients | P-values |
|---|---|---|---|---|
| GDP | Order 0 | LLC | 3.2050 | *(0.99)* |
| | | IPS | 9.5525 | *(1.00)* |
| | Order 1 | LLC | -2.0552** | *(0.01)* |
| | | IPS | -4.8321*** | *(0.00)* |
| | Conclusion | I (1) | | |
| Unemployment | Order 0 | LLC | -1.0443 | *(0.14)* |
| | | IPS | 1.0454 | *(0.85)* |
| | Order 1 | LLC | -5.0899*** | *(0.00)* |
| | | IPS | -5.1033*** | *(0.00)* |
| | Conclusion | I (1) | | |

Notes: *(***), (**) and (*) represent respectively significance level at 1%, 5% and 10%*

**Table 3. Cointegration test results**

| Tests | Coefficients | p-value | Conclusion |
|---|---|---|---|
| Modifiedphillips-perron | -3.1705*** | *(0.00)* | GDP and unemployment are cointegrated |
| Augmented Dickey-Fuller | -7.7678*** | *(0.00)* | GDP and unemployment are cointegrated |

Notes :*(***) represent significance level at 1%.*

**Table 4. Okun's coefficients by country and for WAEMU area**

| | Benin | Burkina Faso | Côte d'Ivoire | Guinea Bissau | Mali | Niger | Senegal | Togo | WAEMU |
|---|---|---|---|---|---|---|---|---|---|
| Error correction | 0,24 *(0.14)* | 0,05 *(0.41)* | 0,11 *(0.12)* | 0,98* *(0.06)* | 0,08 *(0.18)* | -0,01 *(0.70)* | -0,03 *(0.18)* | -0,08* *(0.07)* | 0,04* *(0.06)* |
| Okunshort term | -0,44** *(0.04)* | -0,46 *(0.17)* | -0,37 *(0.17)* | -0,41 *(0.29)* | -0,69*** *(0.02)* | -0,63** *(0.02)* | 0,07 *(0.78)* | - 0,11 *(0.69)* | -0,40*** *(0.00)* |
| Okun long term | -0,05 *(0.91)* | 6,43*** *(0.00)* | -0,06 *(97)* | 0,26* *(0.06)* | -1,73 *(0.45)* | -1,28 *(0.78)* | 12,01 *(0.15)* | -0,50* *(0.06)* | -0,15 *(0.75)* |
| Residualsstationarity test | -5,2*** *(0.00)* | -4,2*** *(0.00)* | -2,8** *(0.04)* | -5,7*** *(0.00)* | -3,0** *(0.04)* | -6,0*** *(0.00)* | -4,6*** *(0.00)* | -4,2*** *(0.00)* | -12,8*** *(0.00)* |
| Residualsautocorrelationt est | 7,85 *(0.45)* | 6,42 *(0.60)* | 6,35 *(0.60)* | 13,11* *(0.07)* | 5,56 *(0.69)* | 11,30 *(0.19)* | -5,55 *(0.70)* | 10,58 *(0.22)* | 28,67 *(0.91)* |
| Residualsheteroscedasticitytest | -0,06 *(0.85)* | 0,01 *(0.97)* | -0,12 *(0.19)* | 0,71 *(0.20)* | 0,06 *(0.31)* | 1,09 *(0.14)* | 0,61 *(0.18)* | 0,05 *(0.94)* | -0,02 *(0.73)* |

Notes :*(***), (**) and (*) represent respectively significance level at 1%, 5% and 10%*

The correlation test confirms the suspicions of validity of Okun's law for the union, Ivory Coast, Niger and Senegal with strong intensity. However, only in the cases of Guinea Bissau and Togo the test indicates the absence of correlation.

*Stationarity test:* The study of the stationarity of the variables carried out by the LLC (Levin-Lin-Chu) and IPS (Im, Pesaran& Shin) tests showed that the variables are integrated of order 1 as indicated in the table 2.

*Cointegration test:* Since the series in the study are all integrated at the same order 1, it is necessary to carry out the cointegration test which indicates the appropriate method for estimating Okun's law in the short and long term. The results of the Phillips-Perron and Augmented Dickey-Fuller tests show that the series are cointegrated,

In Table 4, the upper part gives the estimated coefficients of model (1) and the lower part gives the results of the diagnostic tests. The tests indicate that the residuals of the estimates are stationary, are not auto correlated and that their variances are homogeneous, indicating the robustness of the results. The error correction term indicates only for Togo that there is a long-term equilibrium relationship between the growth rate and the unemployment rate, as it is negative and significant. Consequently, Okun's law is only valid in Togo in the long term, as in Korem (2021). In the cases of Burkina and Guinea Bissau, any growth shock (supply shock) creates a slippage in unemployment. For the other countries and the union as a whole, there is no long-term relationship between growth and unemployment. Okun's law is not generally satisfied in the long term in WAEMU as shown by Abiodun and Oluwafemi (2017). However,

in the short term, Okun's coefficient is negative except for Senegal. The coefficient is significant only for Benin, Mali (The results of this study differ from those of Traoré et al. (2021) on Mali between 1974 and 2018) and Niger. Okun's law is verified in these countries with relatively closed coefficients. These coefficients are closed to that of the WAEMU area, which is significantly negative, Okun's law is validated. It appears that in the short term, the WAEMU zone has the potentialities to reduce unemployment as the estimated Okun coefficient are negative for 7 out of 8 countries and for the zone. Also, the Okun coefficients are relatively closed in intensity for 6 countries. On the other hand, the Okun coefficient is only significant for 3 countries. The WAEMU zone is not currently an optimal employment zone, however a core is emerging and the proximity of the Okun coefficients with the expected sign indicates the viability of an employment union project. To this end, a strategy by short-term objectives could be put in place to eventually achieve the convergence of the Okun coefficients necessary for an employment union.

# CONCLUSION

This study examines the possibility of extending the West African Economic and Monetary Union to an employment union by borrowing the Okun analysis framework. The Okun coefficients of the union and each member country are determined and compared to deduce a certain convergence or proximity, which would dispose the economic and monetary union to be considered as a potential employment union. It appears that in the short term, the WAEMU zone has the ability to reduce unemployment, the estimated Okun coefficient is mainly negative for countries and for the zone. Also, the Okun coefficients are relatively closed. On the other hand, the Okun coefficient is significant for only 3 countries. The overall dynamic is existing but very weak, which justifies its disappearance in the long term. UEMOA has the potential to expand into an employment union, a project which, if taken up by the union, would requiresexperiencinga strategy by objectives (for each country) and the consolidation of short-term achievements.

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